

REMARKS

In the Final Office Action dated December 27, 2004, claims 1-3, 9, 11-16, 21, 23-26, 30 and 32-33 were rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Herley (U.S. Patent No. 5,838,818). In addition, claims 6, 8, 19 and 28 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Herley in view of Zhang et al. (U.S. Patent No. 6,731,794). Furthermore, claims 4-5, 7, 10, 17-18, 20, 22, 29 and 31 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Herley in view of Tao (WO 01/26359).

In response, Applicants respectfully request reconsideration in view of the following remarks. Since no amendment has been made to the claims, there is no need to enter any amendment to place the claims in better condition for appeal.

A. Patentability of Independent Claims 1, 13 and 24

The independent claim 1 recites an element of "*processing said mosaiced image using a demosaicing operator on blocks of said mosaiced image to derive a representation of a demosaiced image, said demosaicing operator incorporating a frequency-based transformation operator to take into account a subsequent frequency-based compression process.*"

The Office Action states on bottom of page 2 that Herley discloses the claimed limitation "because the color interpolation (demosaicing) of Herley must satisfy the DCT coefficient requirement or the DCT (frequency-based transform) is incorporated in the color interpolation process, thus, inherently incorporated a DCT operator to take into account a subsequent frequency based compression process." Applicants respectfully disagree with this analysis.

As correctly stated in the Office Action, the cited reference of Herley does describe a DCT coefficient requirement in conjunction with color interpolation. However, Applicants respectfully assert that this is in reference to NOT just color interpolation but reference to both color interpolation and compression. The compression process of Herley is described in col. 3, lines 36-63, where DCT

coefficients are discussed. The color interpolation process of Herley is described from col. 3, line 65, to col. 4, line 38. Note that there is no discussion of DCT coefficients in this section. The discussion of the DCT coefficient requirement in Herley is with respect to the resulting 24-bit color image after an image has been color interpolated, JPEG compressed and JPEG decompressed. As described in col. 5, lines 1-30, the DCT coefficient requirement and the requirement that “[i]mage should equal the measured data at the mosaic locations” can be nearly satisfied by color interpolating and iteratively JPEG encoding and decoding, followed by overwriting the original mosaic data values to the output of the decoder. This process is further described in col. 5, lines 31-45 with respect to the flow chart of Fig. 5. The color interpolation process, as described in Herley, DOES NOT involve a demosaicing operator that incorporates “*a frequency-based transformation operator to take into account a subsequent frequency-based compression process*”, as recited in claim 1. This conclusion is supported by the fact that the color interpolation of Herley according to one interpolation scheme is described on col. 4, lines 21-29 as averaging the red values measured by the red sensors or blue values measured by the blue sensors, NOT using a demosaicing operator that incorporates “*a frequency-based transformation operator to take into account a subsequent frequency-based compression process*”, as recited in claim 1. Thus, claim 1 is not anticipated by the cited reference of Herley. As such, Applicants respectfully request that the independent claim 1 be allowed.

The above remarks regarding the independent claim 1 are also applicable to the independent claim 13, which recite similar limitations, and to the independent claim 24, which recited similar limitations with respect to a system for processing a mosaiced image. Therefore, Applicants respectfully assert that the independent claims 13 and 24 are also not anticipated by the cited reference of Herley.

B. Patentability of Dependent Claims 2, 3, 14, 15 and 25

The Office Action has also rejected the dependent claims 2, 3, 14, 15 and 25 under 35 U.S.C. §102(b) as allegedly being anticipated by Herley. Specifically, the Office Action alleges that “Herley further discloses the demosaicing operator uses a color space operator for converting an original color space RGB to a different color

space (YCrCb) (col. 3 lines 9-10 and line 49)." Furthermore, the Office Action asserts that "color conversion first, and then demosaicing can be certainly viewed as a one includes another."

The dependent claims 2, 3, 14, 15 and 25 recite a "*demosaicing operator*" that includes "*a color space conversion operator*". Thus, the issue is whether the cited reference of Herley discloses such a claim limitation. The cited reference of Herley DOES NOT disclose a "*demosaicing operator*" that includes "*a color space conversion operator*", as recited in claims 2, 3, 14, 15 and 25. This is supported by the fact that in Herley, the color conversion is performed prior to the color interpolation, which would not be necessary if the demosaicing operator includes a color space conversion operator. Since Herley DOES NOT disclose a "*demosaicing operator*" that includes "*a color space conversion operator*", as recited in claims 2, 3, 14, 15 and 25, these claims are not anticipated by the cited reference of Herley.

C. Patentability of Dependent Claims 9, 21 and 30

The Office Action has also rejected the dependent claims 9, 21 and 30 under 35 U.S.C. §102(b) as allegedly being anticipated by Herley. Specifically, the Office Action has alleged that "Herley further discloses DCT transformation (col. 3 line 42)."

The cited passage of Herley does disclose DCT transformation. However, the cited passage is in reference to compression, NOT color interpolation or demosaicing. Thus, while Herley discloses DCT transformation, Herley DOES NOT disclose a "*demosaicing operator incorporating a frequency-based transformation operator*" in which the frequency-based transformation operator is "*a DCT-based transformation operator*", as recited in claims 9, 21 and 30. Therefore, the dependent claims 9, 21 and 30 are not anticipated by the cited reference of Herley.

D. Patentability of Dependent Claims 4, 5, 17, 18 and 27

The Office Action has rejected the dependent claims 4, 5, 17, 18 and 27 under 35 U.S.C. §103(a) as allegedly being unpatentable over Herley in view of Tao.

Although, the dependent claim 27 is not specifically mentioned in the Office Action, Applicants have assumed that claim 27 is similarly rejected since it recites similar limitations as that of claims 4 and 17.

The remarks made in Response to Office Action filed on August 12, 2004 with reference to claims 4, 5, 17, 18 and 27 have not been addressed in the latest Office Action. Thus, Applicants will present the same remarks below.

In support of this rejection of dependent claims 4, 5, 17, 18 and 27, the Office Action has cited page 11, lines 6-10, of Tao, which is alleged to disclose the claimed limitations of claims 4, 5, 17 and 18. This cited passage of Tao states that "the wavelet filtering used in the demosaicing step 74 should be chosen such that the high frequency band signals in the wavelet compression will be small and close to zero." However, Tao does not disclose "*defining selected coefficients of transformation-related coefficients as being equal to zero*" (emphasis added), as recited in claims 4, 5, 17, 18 and 27. Therefore, the dependent claims 4, 5, 17, 18 and 27 are not obvious in view of Herley and Tao.

E. Patentability of Dependent Claims 7 and 20

The Office Action has also rejected the dependent claims 7 and 20 under 35 U.S.C. §103(a) as allegedly being unpatentable over Herley in view of Tao. In support of this rejection, the Office Action has alleged that the feature of using Bayesian rule "is notoriously well known in the art" and that "[i]t would have been obvious to one of ordinary skill in the art at the time the invention was made to use the scheme of Bayesian rule in the method of Herley in order to obtain efficient compression and reduce the artifacts." Furthermore, the Examiner "has taken an official notice that Bayesian rule (conditional probability distribution) is well known in the art."

Applicants do not assert that Bayesian rule is not well known. However, Applicants do assert that there is no suggestion or motivation found in the prior art to use the Bayesian rule to derive a demosaicing operator, as recited in the dependent claims 7 and 20. With the rejection of claims 7 and 20, the Office Action

has failed to provide the requisite factual basis and failed to establish the requisite motivation to support the conclusion that it would have been obvious to one of ordinary skill in the art to modify the teachings of the Herley reference. The Examiner is requested to cite art supporting his assertions. Alternatively, if the Examiner is aware of facts within his personal knowledge that provide the requisite factual basis and establishes the requisite motivation to support his conclusion, the Examiner is requested to provide an affidavit in accordance with 37 C.F.R. § 1.104(d)(2). Otherwise, Applicants respectfully request that the dependent claims 7 and 20 be allowed.

F. Patentability of Dependent Claims 6, 8, 10-12, 16, 19, 22, 23, 26, 28, 29 and 31-33

Each of the dependent claims 6, 8, 10-12, 16, 19, 22, 23, 26, 28, 29 and 31-33 depends on one of the independent claims 1, 13 and 24. As such, these dependent claims include all the limitations of their respective base claims. Therefore, Applicants submit that these dependent claims are allowable for at least the same reasons as their respective base claims.

Applicants respectfully request reconsideration of the claims in view of the remarks made herein. A notice of allowance is earnestly solicited.

Respectfully submitted,
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